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TORREYA

A Monthly Journal of Botanical Notes and News

JOHN TORREY, 1796–1873

EDITED FOR

THE TORREY BOTANICAL CLUB

BY

NORMAN TAYLOR

Volume XVIII

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CONTENTS

The Hawaiian Violaceae: VAUGHAN MACCAUGHEY 1

A new hybrid sunflower: T. D. A. COCKERELL 11

Concerning some species of Carduus in Colorado: GEO. E. OSTERHOUT 14

Some abnormal poplar flowers: GEORGE T. HASTINGS 16

News Items 20

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Vol. 18 No. 1.

THE HAWAIIAN VIOLACEAE

By Vaughan MacCaughey

The Violaceae are represented in the Hawaiian flora by 14 species and varieties—11 in the genus *Viola* and 3 in *Isodendrion*. It is noteworthy that these are all endemic, ligneous, and shrubby. The genus *Isodendrion* Gray is endemic. Most of the species and varieties are highly precinctive and give evidence of having been members of the Hawaiian flora for a very long time.

The Hawaiian violets have been studied by a number of taxonomists, as is indicated by the following select bibliography:

1826 Gingins in Linnaea I: 408
1854 Gray in Botany of the U. S. Exploring Expedition
1866 Mann in Enumeration of Hawaiian Plants
Flora of the Hawaiian Islands
1888 Hillebrand in Flora of the Hawaiian Islands
1897 Heller in Plants of the Hawaiian Islands
1908 Forbes in New Hawaiian Plants
1909 Forbes in New Hawaiian Plants
1911 Rock in Notes upon Hawaiian Plants.

Practically all of this material is very rare and inaccessible outside of large botanical libraries.

The present paper is, however, the first comprehensive account which has included all of the recorded species and varieties. It is based upon field work extending over nearly ten years and contains new ecological material.

The genus *Viola* comprises about 200 species, widely distributed throughout the world, but most abundant in temperate regions. The tribe Violae, to which *Viola* belongs, occurs chiefly

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in Europe, Siberia, and North America; the woody species, of which the Hawaiian forms are representative, are mainly natives of tropical America. The Violas are leafy-stemmed or stemless herbs, or small shrubs; the Hawaiian species sometimes reach a height of 6 feet. The leaves are alternate, with persistent stipules. Most species produce two sets of flowers. The early set is showy, petaliferous, often fragrant, and usually sterile. This is succeeded by a set of cleistogamous flowers that are usually without petals, and never expand, but bear abundant seed. These small apetalous cleistogamous flowers are very fertile and quite diverse in structure, and are of great taxonomic value. The 5 imbricate, persistent sepals are generally produced at the base below their insertion. The 5 petals are unequal, the lowest one spurred, forming a nectar sac. The 5 stamens are hypogynous, alternate with the petals, and on short filaments or subsessile. They closely surround the ovary, with their connective prolonged beyond the apex; the 2 lowest with appendages that project into the spur. In the cleistogamous flowers these two stamens alone develop.

The ovary is simple, 1-celled, with 3 parietal placentae. The capsule is 3-valved, loculicidal, and opens elastically when mature. The valves spring back and at the same time fold on the middle, so that the seeds are forcibly ejected. The seeds are anatropous, with a hard testa and copious albumen; ovoid-globose; embryo straight, axile; cotyledons flat.

It is well known that allied species of *Viola* hybridize freely when growing together, and it is possible that some of the Hawaiian forms have originated in this way. The hybrids commonly display characters which are more or less intermediate to those of the parent species. The offspring of the hybrids are frequently much unlike the parent stock and unlike each other, and revert to the characters of the two original species.

The Hawaiian Violas, like those of other parts of the world, contain an alkaloid which possesses emetic and laxative properties. Several species were used medicinally by the primitive Hawaiians for skin diseases, as emetics, etc.

The endemic genus *Isodendrion* is distinguished from *Viola*

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by the fact that the petals are equal, not spurred, and the anthers are not appendiculate. The three species, which strongly resemble the true violets, are shrubs with entire leaves and persistent, rather intrapetiolar, keeled stipules. The flowers are small, axillary, solitary, and shortly pedicellate. The sepals are equal, persistent. The petals are nearly equal, linear-spathulate; the long claws erect and contiguous, the broader blades spreading, imbricate. The filaments are short, distinct, the anthers connivent around the ovary, their connective neither spurred nor prolonged above. The style is elongate, slightly curved and thickened near the apex, with anterior stigma. The capsule is coriaceous, surrounded by the withered corolla, 3-valved, the placentae along the middle of the conduplicate valves, with 2–4 seeds. Seeds obovoid, smooth, crustaceous.

Viola and *Isodendrion* are distributed rather generally throughout the larger islands of the archipelago, both in the montane rain-forests and summit bogs, and in semi-arid districts. The range by islands is shown in the following table:

Name	Kauai	Oahu	Molokai	Maui	Lanai	Hawaii
1. *Viola Chamissoniana*	*	*	*	*	.....	.....
2. *Helena*	*	.....	.....	.....	.....	.....
3. var. *Laniaensis*	.....	.....	.....	.....	*	.....
4. *helioscopa*	.....	*	.....	.....	.....	.....
5. *Kauaiensis*	*	.....	.....	.....	.....	.....
6. *Mauiensis*	.....	.....	*	*	.....	.....
7. var. *Kohalana*	.....	.....	.....	.....	.....	*
8. *Oahuensis*	.....	*	.....	.....	.....	.....
9. *robusta*	.....	.....	*	.....	.....	.....
10. var. *Mauiensis*	.....	.....	.....	*	.....	.....
11. var. *Wailenalenae*	*	.....	.....	.....	.....	.....
12. *Isodendrion pyrifolium*	.....	*	.....	.....	.....	.....
13. *longifolium*	*	*	.....	.....	.....	.....
14. *laurifolium*	.....	*	.....	.....	.....	.....
Totals	5	6	3	3	1	1

It will be noted from the above table that the older islands, to the west, are richer in species and varieties than are the relatively younger islands to the east. Kauai and Oahu possess 9 forms; Maui and Hawaii but 4. Ten species and varieties are strongly hygrophytic; 4 have been recorded from semi-xerophytic habitats. The ecologic range is striking; on one hand are the exces-

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sively humid summit bogs, on the other the dry, open, exposed, wind-beaten ridges and foothills.

Hygrophytic	*Xerophytic*
Viola Chamissoniana	*Viola helioscopa*
Helena and var. *Lanaiensis*	*robusta* var. *Mauiensis*
	Isodendrion pyrifolium
Kauaiensis	*laurifolium*
Mauiensis and var. *Kohalana*	
Oahuensis	
robusta and var. *Wailenalenæ*	
Isodendrion longifolium	

The vertical range extends from 1,000 to 6,000 feet. On the very high mountains of Maui and Hawaii (8,000 to nearly 14,000 feet) they rise to higher levels, as do many other plants of the middle and lower forest zones.

Descriptions of the Species

The following descriptions have been taken from the original sources, with emendation, revision, and additional material.

1. *Viola Chamissoniana* Gingins. Described in Linnaea I: 408, 1826.

An erect, branching shrub, 3–5 feet high. Stem woody, fine-grained, ½–1 in. thick. Branches diffusely foliose. Stipules dark, scarious, 2–4 lines, broadly deltoid, entire and long-acuminate, or glandular-dentate. Petioles 1–2 in. Blade cordate, those of the upper leaves rarely ovate, 3–6 in. by 1–2½ in.; dentate with appressed callous teeth, chartaceous, glabrous.

Peduncles 1 or 2 to a branch, ½–1½ in. long, with 2 subulate bracts above the middle; single-flowered, the flowers large and handsome. Sepals narrow lanceolate, 2–4 lines, shortly pointed at the base. Petals pink, rose, or purplish, twice as the sepals long or more, oblong-spathulate; the lowest petal deeply saccate. Anthers 1 line long, with narrow connective and short, broad terminal appendage; the 2 lowest anthers with a long, broad, obtuse spur. Capsule 6 lines long, with 6–8 obovoid, blackish seeds in each placenta.

Dimorphism is indicated by the occasional occurrence of well-developed diminutive flowers not exceeding 3 lines in length, with petals scarcely longer than the sepals.

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Occurs on all the islands, except possibly Hawaii, at elevations of 1,000–4,000 ft. in the rain-forests. Native name "*Pamakani.*"

Var. *beta* Hillebrand, Flora, p. 17, 1888, has the young shoots and inflorescence puberulous with a silvery-gray tomentum; old leaves pubescent. Leaves serrate with uncinate teeth; stipules large, 6 lines long; flowers whitish. Confined to the Wai-ale-ale rain-forests of Kauai, at about 3,000 feet. Native name "*Olopu.*"

2. *Viola Helena* Forbes. Described in Occ. Papers Bishop Museum, vol. 4, no. 3, 1908, p. 42 and plate.

"Plant 1–2 feet high. Leaves lanceolate, tapering at both ends, glandular-serrate, 3–4½ lines long by 7–9 lines wide, with petioles of 2–3 lines.

"Scapes or peduncles 1 or 2 on a stem, 2–3 lines, with 2–3 linear bracts, bearing an umbel of 2 flowers on pedicels of 10–14 lines which have bractlets of about 1 line. Sepals lanceolate, 2 lines long. Petals a little more than twice as long, the lower saccate, white or pale lavender, the lower and lateral ones bearded. Capsule glabrous, 7 lines long."

Recorded only from the Wahiawa Mountains of Kauai; hygrophytic.

3. *V. Helena* var. *Lanaiensis* Rock. Described in College of Hawaii Bulletin 1, 1911, p. 6.

"Caudex erect, 3 dm.–13 dm. long, woody, hollow, foliose at the apex. Leaves oblong-lanceolate, about 1 dm. × 12–18 mm., acuminate at both ends, on somewhat margined petioles of 5 mm., serrate with callous teeth; bluish-purple when young, light green with pellucid oil-dots when old; stipules lanceolate, 1 cm. long, caudate-fimbriate, blackish, with a prominent median vein.

"Peduncles bi-bracteate, 1.5 cm. with a bi-bracteolate pedicel of 4.5 cm. long, bearing a single small, pinkish-white flower; sepals lanceolate, not saccate. Capsule lanceolate, 12 mm. long; seeds ovoid, blackish."

Recorded only from the island of Lanai, 2,000–3,200 feet; hygrophytic.

4. *Viola helioscopa* Hillebrand. Described in his Flora of the Hawaiian Islands, 1888, p. 17.

An erect shrub, 2–3 feet high, with a few slender wand-like branches foliose at the top. Stipules deltoid-subulate, fringed with long, glandular fimbria. Leaves coriaceous, glabrous,

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ovate, 1–1½ in. long by 1 in. wide, acuminate, serrulate; the truncate base passes abruptly into a petiole of 2–4 lines.

Peduncles generally 2 to a branch, ascending, 1½–2 in. long. Each bears a single large, erect, showy flower, and is bi-bracteolate a short distance from the calyx. The sepals are narrow-lanceolate, 4 lines long, drawn out at the base into a short appendage. The petals are 8–14 lines long, broad-oblong or orbicular, on long claws, the lowest petals saccate; color pure waxy white. Capsule 6 lines long; seeds dark.

Recorded only from the Waianae Range of Oahu, on dry, open, semi-xerophytic ridges. A very handsome species, worthy of horticultural experimentation.

5. *Viola Kauaiensis* Gray. Described in the Botany of the United States Exploring Expedition, 1854, p. 85.

Stem either short and erect, or a creeping or trailing rhizome which may be more or less subterranean. Rhizome 2–3 lines in diam., scaly near the apex with obtuse stipules, and bearing (besides the remnants of older ones) 1 or 2 slender scapes 4–8 in. long. These scapes have 1 internode and a single leaf and flower, or with 2 internodes and a second leaf and flower. Petioles slender, 2–6 in. long. Blade broadly ovate, orbicular, or reniform, with a cuneate base, less than 1 in. diam., rather thick with prominent subflabellate veins; margin crenate, surface glabrate. Stipules deltoid, 2–3 lines long, with a few short teeth.

Petaliferous flowers on peduncles of 2–4½ in., which bear a pair of short subulate bracts in the upper portion. Sepals 3½ lines long, narrow-lanceolate, the base produced into a short appendage. Petals twice as long, pale blue, not bearded, oblong-spathulate, the lowest one slightly saccate. Anthers free, half as long as the sepals, attached to the anterior face of a broad connective which fringes them and extends above in the shape of a hood. The 2 lowest anthers have a short dorsal keel near the base. Style curved, clavate above, with anterior stigma. The smaller flowers have petals not exceeding the calyx; stamens with distinct filaments nearly equalling the petals; style thicker and hooked. Capsule acute, 5–6 lines long, with 8–10 seeds in each placenta.

Recorded only from the swamps on the upper slopes and summit of Wai-ale-ale, Kauai, 4,000—5,250 feet. It grows in the shade of the stunted *lehua* trees (*Metrosideros polymorpha*) that are characteristic of these swamps, and also epiphytically on the

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moss-covered tree-trunks. It is strongly hygrophytic. Native names "*Pohehiwa*" and "*Kalili.*"

6. *Viola Mauiensis* Mann. Described in Enumeration of Hawaiian Plants, no. 11, 1866.

Stem simple, or dividing at the base, prostrate or ascending, woody below, a few inches to 2 feet long. Its upper portion is covered with dark brown, sharply cut, long-acuminate stipules, and foliose near the apex. Leaves on petioles of about 1 inch, coriaceous, glabrous, broadly ovate and obtuse or rounded, 1–1½ in. diam., truncate or cuneate at the base, serrulate with callous teeth.

Scapes or peduncles 1–3 on a stem, 2–6 in. long, with 2 narrow acute bracts about the middle, bearing an umbel of 2–4 flowers on pedicels of 1 inch, which are again bracteolate. Sepals narrow-lanceolate, 4 lines, purplish, scarcely produced at the base. Petals twice as long, unguiculate, obovate, dark blue, the lowest saccate. Anthers oblong, 1–1½ lines long, not margined, tipped with a short papilla, the 2 lowest broadly spurred. Style curved, thickening toward the stigma. Capsule 6 lines long, with 8–10 seeds to the placenta.

Characteristic of the summit bog of West Maui, but also recorded from the Kawela swamps of East Molokai, 4,000 feet. Strongly hygrophytic.

7. *V. Mauiensis* var. *Kohalana* Rock. Described in College of Hawaii Bulletin 1, 1911, p. 5.

"Caudex 10–16 dm. long, woody, more or less prostrate. Stipules ovate-lanceolate, reddish-brown. Leaves like the species, on petioles of 2–7 cm. Peduncles blackish-blue when with dark blue flowers, light yellow when with white flowers; bearing umbels of blue or white flowers on bi-bracteolate pedicels of 3–9 cm. length; capsules as for the species."

Recorded only from the summit bogs of the Kohala Mountains, island of Hawaii, at altitudes of 4,600–5,200 feet. "The flowers are very fragrant and large, the dark blue-flowered specimens occurring down to an elevation of 4,600 feet, while the white ones are found only higher up, 5,200 feet elevation. . . . This variety differs from the species in its very long caudex, scapes, and petioles, as well as pedicels and in its large flowers which are also white." It grows both in the swampy soil and epiphytically on mossy tree-trunks.

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8. *Viola Oahuensis* Forbes. Described in Occ. Papers Bishop Museum, vol. 4, no. 3, 1909, p. 40 and plate.

"Stem erect, simple or sparingly branched, 6 in. to 1 foot high. Leaves 4.5–5 × 2–2.25 in., ovate, uneven-sided, glandular-serrate, acute, base acuminate, drawn out into a winged petiole of 1 inch. Stipules lanceolate, glandular-serrate, acuminate, 7–14 lines.

"Scapes or peduncles 1–3 on a stem, 9 lines long, with 2 narrow acute bracts and a reduced leaf, bearing 2 flowers on peduncles of nearly equal length, about 2 in., these bracteolate and often with a reduced leaf. Sepals lanceolate, faintly puberulent, 3 lines long. Petals about twice as long, white, broad, oblong to orbicular, the lower saccate, not bearded. Capsule a little over 5 lines long, glabrous."

Recorded only from the Koolau Range, Punaluu and Kahana sections, on the island of Oahu, at altitudes of 1,800–2,000 feet. Hygrophytic.

9. *Viola robusta* Hillebrand. Described in his Flora of the Hawaiian Islands, 1888, p. 16.

Stem 3–5 feet high, light-wooded, pale, about ½ in. thick at the base. It is simple or sparingly branched in the upper portion. The ascending branches are hollow, herbaceous at the extremities, and carry many old and dry flower-stalks. The stipules are long, persistent, dark, broadly lanceolate, long-pointed, denticulate, and about ½ in. long. Leaves membranous, puberulous underneath, ovate, acute, serrulate, 3–4½ in. long by 2–2½ in. broad; base truncate or cuneate; petiole 1–1½ in. long.

Flowers nodding, numerous; an inflorescence rises from nearly every axil. The flowers are generally single, or 2–4 irregularly disposed on a peduncle of very variable length. Pedicels 2 in. long, bi-bracteolate about the middle, the bracts long-subulate from a broad base, but often foliaceous. Sepals gibbous at the base, but not produced, narrow-lanceolate, 3–4 lines long. Petals twice as long, pale purple, oblong, the lowest saccate, the 4 upper ones converging, assurgent. Anthers shortly apiculate, the 2 lowest with a narrow dorsal wing along their whole length, which does not run out into a spur. Capsule 8–10 lines long, with 8–14 pale seeds on each placenta.

Recorded only from the summit bogs of East Molokai, in very wet situations, at altitudes of 2,500–4,000 feet. It grows in the swampy soil, and on the mossy trunks of trees. Native name

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"*Pamakani*"; like several other species, it is used medicinally by the Hawaiians, who make a decoction of the foliage.

10. V. *robusta* var. *Mauiensis* Rock. Described in College of Hawaii Bulletin 1, 1911, p. 6.

Habit as for the species. Leaves with hirsute midribs. Blade oblong, ovate, subcordate, or truncate. Petioles hirsute, 1.5–2.5 cm. Stipules triangular from a broad base, acuminate, ciliate on the margins. Peduncles bibracteate, hirsute, 2–4 cm. long, one-flowered, (never two) in the axils of every leaf. Calyx hirsute, linear-lanceolate, acuminate. Petals pinkish. Capsule 1.5 cm. long. Seeds ovoid, blackish.

Recorded only from the middle slopes of Mount Hale-a-ka-la, island of Maui, at altitudes of 3,500–5,000 feet. In semi-xerophytic gulches. Native name "*Pamakani*"; used medicinally.

11. V. *robusta* var. *Wailenalenae* Rock. Described in College of Hawaii Bulletin 1, 1911, p. 6.

Stem 1–2 m. high, the branches as well as the stems hollow. Stipules light brown, broadly lanceolate, acuminate, about 3 cm. long, denticulate or serrate almost to the base. Leaves thick, fleshy, light green underneath, darker above; 9–10 cm. long by 3–4 cm. broad; ovate, acuminate at base and apex, serrulate with the base entire; midrib and petiole dark purple; petiole 4 cm. long.

Flowers in the axils of the upper leaves; single or two on a short bi-bracteate peduncle. Pedicels 4–5 cm. long, bi-bracteolate above the middle. Flowers nodding; sepals gibbous at the base, 1 cm. long. Petals white, not fragrant; twice as long as the sepals; the lower saccate. Anthers apiculate, all winged. Style curved, thickening toward the stigma. Capsule hirsute when young.

Recorded only from the high, swampy plateau of Wai-ale-ale, island of Kauai, along Wai-lena-lena Stream, altitude 4,500 feet.

12. *Isodendrion pyrifolium* Gray. Described in the Botany of the United States Exploring Expedition, 1854, p. 93, pl. 8.

A spreading shrub, 2–3 feet long, the wand-like branches with short branchlets. The branchlets are foliose near the apex and covered for some distance below with narrow, lanceolate or subulate, silky-haired converging stipules, 1½–2 in. long. Leaves membranous, pubescent when young, ovato- or elliptico-oblong, obtuse, crenate, 1½–2 in. long by ¾–1 in. wide, on petioles of 3–5 lines.

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Pedicels single, 2–4 lines long, pubescent, with a pair of rather broad scarious bractlets at the middle. Sepals connected at the base, 2½–3 lines, lanceolate, silky, scarious with thin margins. Petals 5–6 lines long, rather thick, greenish-white. Stamens nearly half the length of the sepals, the anthers as long as the filaments. Style almost straight, of even height with the petals. Capsule 6 lines long, each placenta with 2–5 obovoid pale seeds. The flowers are fragrant.

On all the islands, from Niihau to Hawaii, in the scrub vegetation on the semi-xerophytic foothills and exposed open ridges, at elevations of 1,000–3,000 feet. Native name "*Aupaka.*"

13. *Isodendrion longifolium* Gray. Described as above, loc. cit., p. 95, pl. 9.

A glabrous shrub reaching a height of six feet or more, with rather stout branches and scattering leaves. Stipules erect, triangular or lanceolate, 1½–2 lines long. Leaves chartaceous, pale, shining, obovate-oblong, obtuse or shortly acuminate, gradually narrowing to the base, repandly crenate or subentire, 6–8 in. long by 2–2½ in. broad, on short petioles of ¼–1 in.

Flowers single, from short and thick bracteate spurs, the naked pedicels 1½ lines long. Sepals 2 lines long, glabrous. Petals twice as long, strap-shaped, scarcely dilated above, purplish-white. Stamens as for 12, the filaments curved. Capsule 3–5 lines long.

Confined to the island of Kauai, Wai-ale-ale, and the Waianae Range on Oahu, Ka-ala, at elevations of 2,000–3,000 feet.

14. *Isodendrion laurifolium* Gray. Described as above, loc. cit., p. 96.

A small glabrous shrub, the stipules subulate, brownish. Leaves oblong, acute, rounded at the base, repandly crenate or subentire, pale below, chartaceous, shining, 3½ in. long by 1 in. broad, on petioles of 1–2 lines.

Flowers single, bi-bracteolate, on pedicels of 1–2 lines, or the pedicels on bracteate spurs and naked. Other data not known.

Recorded only from the Koolau Range, island of Oahu, on exposed ridges of Wailupe Valley, a semi-xerophytic region. Little is known concerning this rare and highly localized species.

The following table will aid in roughly distinguishing the Hawaiian violets:

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Name	Stature, Feet	Color of Flowers	Fragrance
V. Chamissoniana	3–5	Pink, rose, purple	
Helena	1–2	White, pale lavender	
var. *Lanaiensis*	1–4	Pinkish-white	
helioscopa	2–3	Pure waxy white	Yes
Kauiensis	1–3	Pale blue	
Mauiensis	1–2	Dark blue	
var. *Kohalana*	4–6	White to dark blue	Yes
Oahuensis	½–1	White	
robusta	3–5	Pale purple	
var. *Mauiensis*	3–5	Pinkish	
var. *Wailenalenae*	3–6	White	
I. pyrifolium	2–3	Greenish-white	Yes
longifolium	6–8	Purplish-white	
laurifolium	2–3?		

COLLEGE OF HAWAII,
HONOLULU

A NEW HYBRID SUNFLOWER

BY T. D. A. COCKERELL

In 1895 Rydberg described a supposed species *Helianthus aridus*, which occurred in the region of *H. petiolaris* and *H. annuus lenticularis*, and appeared to be a possible hybrid between the two. Another form, known as *H. petiolaris* var. *patens* (Lehm.) Rydb., was also suspected of being a hybrid.* It was therefore particularly desirable to produce a genuine *petiolaris* × *annuus* hybrid, for comparison with these more or less intermediate forms. My wife made the crosses last year, and this year we have the resulting plants in large numbers. The *petiolaris*, used as the seed plant, was a specially fine but typical plant raised from seed collected by Mr. D. M. Andrews in Oklahoma. The *annuus* were various, including chestnut-red (*coronatus*) forms. The *H. petiolaris* was perfectly fertile with the *annuus* pollen, and the hybrids are all alike in general appearance.

Helianthus annuus × *petiolaris*, n. hybr.

Plants about four feet high, freely branching, the growth essentially like *petiolaris;* stems and branches hairy, more or less speckled with purple; leaves alternate, rarely opposite, the petioles about equal to the blades, or often shorter; leaf-blades with

* American Naturalist, XLIX (1915), pp. 611–613.

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broad base (*annuus*-style), upper surface shiny (*petiolaris* character), the margins remotely and rather feebly dentate; smaller leaves narrower, practically entire; involucral bracts broad but tapering, the margin rather long-ciliate; disc small, 26–28 mm. diameter, dark with in some cases the white-haired center of *petiolaris* weakly indicated; rays long and ample, 34–42 mm. long, in one or two rows; achenes (immature) delicately hairy all over. When the pollen has come from a red *annuus*, the chestnut-red color appears in the hybrid, but always (on upper side) at base of rays, forming a very distinct ring or band occupying about the basal quarter of the rays. Thus the color-pattern is unlike that of *H. annuus*, and resembles rather that of *H. cucumerifolius*. On the under side of the rays the middle third shows more or less red, especially on the apical half; there is no relation between the patterns of the upper and under sides.

This hybrid is obviously not *aridus* or *patens*. If those plants are in any sense of hybrid origin, they are certainly not F_1 hybrids between *petiolaris* and *annuus*. On the other hand, the above hybrid should occur in nature, wherever the two species grow together. In the size of the flower-heads it is intermediate between the parents; in the general mode of growth and shiny leaves it is *petiolaris*, but the broad leaves with truncate base have the shape of *annuus*. The *petiolaris* color-pattern, not before known, is dominant over that of *annuus*. In all respects the plants are very like the *annuus* × *cucumerifolius* crosses previously made, and it is clear that *H. petiolaris* is a close relative of *cucumerifolius*. An important character not mentioned in current descriptions of *H. petiolaris* is the white center of the disc. This is due to the remarkable tufts of white hairs at the ends of the disc bracts, but only on those at and near the center. This character is wholly absent in all *H. annuus*. In the hybrid it is feebly indicated.

It is necessary to consider briefly the nomenclatural history of *H. petiolaris*. Nuttall described it in 1821 "from the sandy shores of the Arkansa; flowering in August." He notes that the leaves are "somewhat shining and almost destitute of serratures." The achenes are "covered with a silky and fulvous down." The flowers are about 3 or 4 inches in diameter, and the petioles and peduncles are of great length.

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Twenty years later Nuttall described his *H. integrifolius*, said to closely resemble *petiolaris*, but with the lower leaves opposite and the peduncles relatively short. A variety *gracilis* had the leaves denticulate, scarcely 3-nerved, and the involucral bracts acuminate.*

In 1828 Lehmann described *Helianthus patens*, peculiar for the large heads (as compared with the common plant known as *petiolaris*), the long petioles and peduncles, and the peduncles fleshy toward the top. The leaves are shaped essentially as in *annuus*, or at any rate broader than in *petiolaris*. This, in its large heads and shape of leaf-blades, resembles our hybrid; but the latter has not especially long petioles, nor are the peduncles noticeably fleshy toward the top. In the long peduncles and petioles, and in the large heads, it resembles *H. petiolaris* as originally described. If *patens* can be separated at all from the original *petiolaris*, it must be by the broader leaves; Nuttall says of *petiolaris* and *integrifolius* both, that the leaves are "ovate or ovate-lanceolate." The original *petiolaris* appears to have been described from plants grown in Philadelphia from seed, and this may have affected its character.

It appears probable, however, that *H. integrifolius* is really the common plant of the Rocky Mountain foothills, which we know as *petiolaris*. The type of *petiolaris* may be essentially identical with *patens*, and thus we shall have to write *H. petiolaris integrifolius* (Nutt.) for the plant generally known as *petiolaris*. Suppose, however, that the original *petiolaris* and *patens* are of hybrid origin, though not F_1 hybrids of *annuus* × *petiolaris* Auctt., what will be the nomenclatural result?

H. aridus is not, I think, a hybrid; but rather a variety of *H. annuus lenticularis*.

H. canus (Britton) Wooton & Standley is a remarkable species which used to be considered a variety of *petiolaris*. I examined a specimen in U. S. Nat. Museum from near Casas Grandes, Chihuahua (*E. W. Nelson*). The small bran ches and stems are densely covered with white pubescence; involucral bracts with acuminate ends; disc white in middle as in *petiolaris*.

* Trans. Amer. Phil. Soc., N. S., **8**: 366. 1841.

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There is much more to be said eventually about hybrid sunflowers, but some of them are very puzzling. We have a long series of plants grown from *H. annuus* pollinated by different perennial species, but showing *only annuus* characters. Other annual × perennial crosses have given quite different results, and at present we cannot pretend to understand the various results obtained. Experiments by Sutton in England have proved no less perplexing.*

The doubling of the rows of rays in annual sunflowers appears to be an old character. La Farge, in "One Hundred Masterpieces of Painting" (1912), reproduces a painting by Van Dyck (1599–1641), in which appears a very large sunflower, with two or three rows of rays.

CONCERNING SOME SPECIES OF CARDUUS IN COLORADO

By Geo. E. Osterhout

A perplexing group of plants in Colorado is made up of the species of *Carduus*. There are quite a number of species and there are many forms which are intermediate, and do not conform to the descriptions of the recognized species. Dr. Rydberg accounted for many of these by recognizing them as hybrids, Bull. Torrey Club **37**. But it is not certain that all these forms are hybrids, and if some of them originated in that way, in time they may have become species, and should be so recognized.

Carduus Osterhoutii Rydb., Bull. Torrey Club **32**: 131.

One of the species of the high mountains accords more or less with the description of *Cirsium Hookerianum* Nutt. The type locality of this is much farther north, and Dr. Gray did not credit it to the Colorado mountains. In the Synopt. Flora N. A. he says: "Upper wooded and subalpine region of the Rocky Mountains, north of lat. 48°." There is reasonable doubt if this northern plant is found in the Colorado mountains, but Prof.

* Stand. Cyclop. Hort., **6**: 3281. 1917. The *H. annuus* × *cucumerifolius* hybrid was reported by A. Andrée in 1913, and again (from plants grown in Sweden) by Lundström in 1914. (Cf. Bot. Centralbl., 1915, No. 10, p. 242; 1916, No. 2, p. 31.) See also Journ. of Heredity, 1915, p. 545.

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Nelson has accepted it in the New Manual of Rocky Mountain Botany, using Dr. Gray's description. Dr. Rydberg published it as *C. Osterhoutii*, Bull. Torrey Club **32**: 131; and afterward made it a hybrid of *C. griseus* × *scopulorum*, Bull. Torrey Club **37**: 548. It is true that there are forms which are intermediate between *C. scopulorum* Greene and this plant, but the plant which Dr. Rydberg described and *C. scopulorum* are as distinct as are *C. Hookerianus* Gray and *C. eriocephalus* Gray as described in the Synopt. Flora N. A.; and if *C. Osterhoutii* is distinct from *C. Hookerianus* I think it should be accepted as a species.

Carduus araneosus Osterhout, Bull. Torrey Club **32**: 612.

In the New Manual of Rocky Mountain Botany Prof. Nelson made this a synonym of *C. Hookerianus eriocephalus* (Gray) A. Nels., and in his list of hybrid thistles Dr. Rydberg classified it as *C. griseus* × *Parryi*, Bull. Torrey Club **37**: 549. *C. Hookerianus eriocephalus* (Gray) A. Nels., which I have been accustomed to label *C. scopulorum* Greene, is very leafy, the narrow leaves thickly beset with prickly teeth, the heads in a close cluster, the involucral bracts narrow and long, of nearly the same length, usually long wooly, and no glutinous spot. *C. araneosus* has broader leaves, the divisions not numerous and comparatively broad, tipped by a weak prickle, the bracts in successive lengths, with a glutinous spot, and arachnoid on the edges. There is scarcely any similarity between the two, and in the natural order they are not closely related. None of the characters which mark *C. Parryi* or *C. griseus* appear in *C. araneosus* to any marked degree; there are neither the "lacerate-fimbriate tips" of *C. Parryi* or the long flat bracts of *C. griseus*, and neither *C. Parryi* or *C. griseus* has a glutinous spot on the bracts. So far as I can see *C. araneosus* is as good a species as most of our Rocky Mountain thistles.

Carduus laterifolius Osterhout, Muhlenbergia **1**: 141.

This is another species which has a glutinous spot on the involucral bracts. The bracts are in successive lengths and tipped by a slender upright spine. In the typical forms the leaves are broad and little divided; but some other forms which I have placed with it, because they seem nearest to it, have narrower

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and more divided leaves. These two are medium-sized thistles, *C. araneosus* 5 to 7 dm. high, rather slender; *C. laterifolius* somewhat larger.

Where in an arrangement of the species of the genus do these two, with a glutinous spot on the involucral bracts, belong? They do not seem to belong with any of the species which have been so characterized in the manuals; not, at least, with the Undulati group, for the leaves are glabrate above. Possibly they might be arranged with the Altissimi, but they lack the general appearance of that group; they have not the form of the leaf or the shape of the head. They seem, rather, to belong to the Carlinoides group, having a resemblance to *C. Americanus.* If they are hybrids one of the parent forms would seem to be *C. Americanus*, and the other some species with a glutinous spot on the involucral bracts. In *C. araneosus* we would have to account for the arachnoid involucre, and in *C. laterifolius* for the broad leaf in the typical forms; in either case the parent form does not seem to be available. Besides there seem to be hybrid forms of *C. Americanus* and *C. laterifolius*, plants with broad leaves, a glutinous spot on the involucral bracts, and fimbriate bracts. Considering their general characteristics it would seem that they belong with the *Carlinoides* group, near to *C. Americanus.*

With the *Carlinoides* group also belong *C. spathulatus* Osterhout, and *C. modestus* Osterhout. *C. aciculatus* Osterhout belongs with the Undulati, having a resemblance to the species of that group. It has narrow involucral bracts, slender spreading spines, and leaves tomentose on both sides. It is about as near *C. undulatus* Nutt. as any of our Colorado species.

WINDSOR, COLORADO

SOME ABNORMAL POPLAR FLOWERS

BY GEORGE T. HASTINGS

In April, 1916, a peculiar tree of the aspen—*Populus grandidentata*—was found beside a new road on the talus slope of the Palisades about opposite 220th Street, New York. The tree at

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the time was covered with slender green catkins of pistillate flowers. On several branches there were larger, gray catkins—apparently staminate—so different from the others as to be noticeable at a considerable distance. These catkins proved to

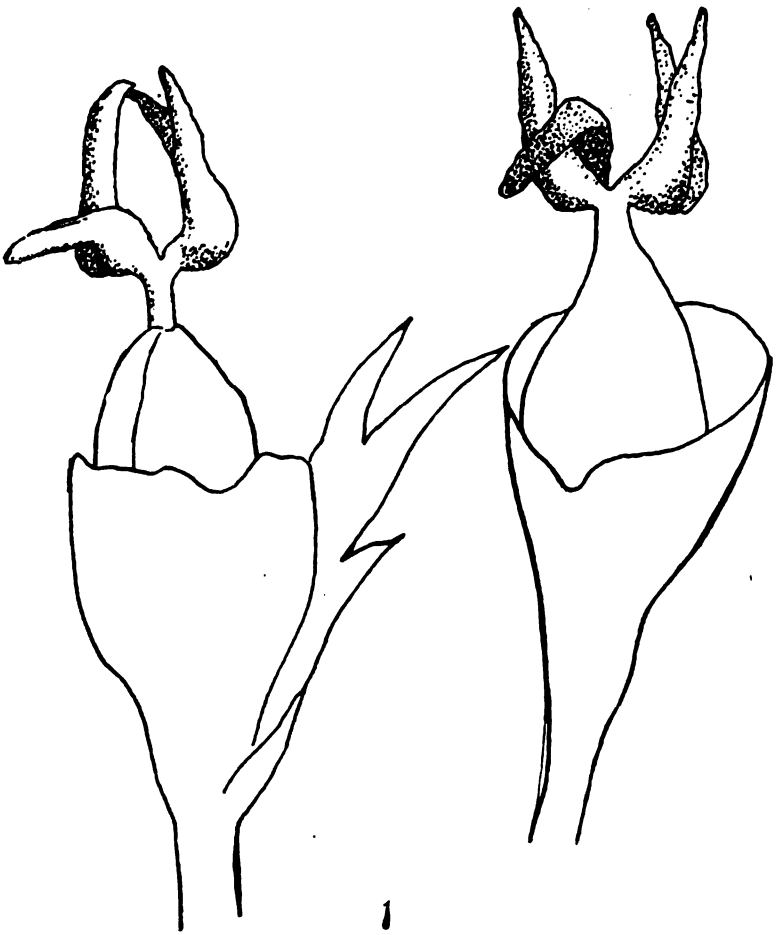

FIG. 1. Normal pistillate flower of *Populus grandidentata*.

be made up of staminate, pistillate, and perfect flowers arranged without any regular order. On some of the catkins staminate flowers predominated, on others pistillate—but most of them were made up almost entirely of perfect flowers. The tree was visited

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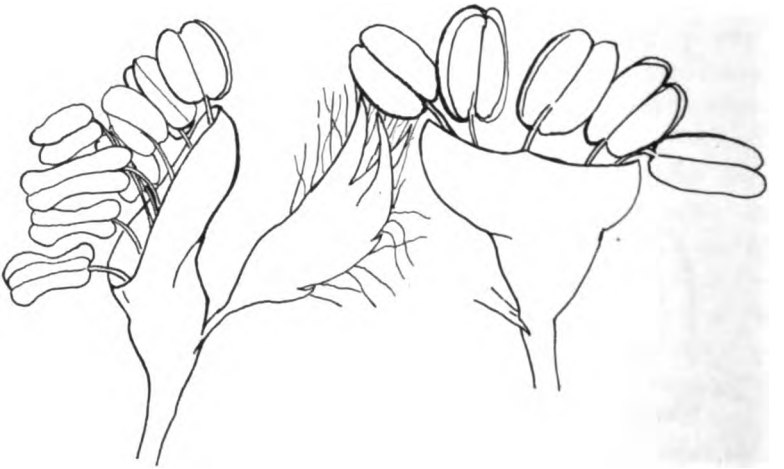

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FIG. 2. Normal staminate flowers of *Populus grandidentata*.

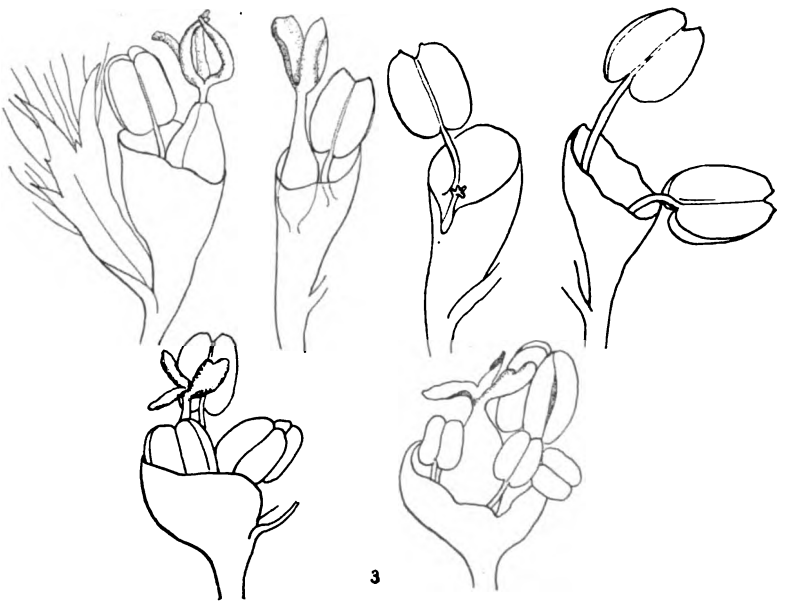

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FIG. 3. Various abnormal flowers of *Populus grandidentata*.

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again in the latter part of April, 1917, and the same characters observed. On most branches the flowers were ordinary pistillate ones, like those on other trees in the neighborhood. They had a receptacle in the form of an oblique cup closely surrounding the basal one half or two thirds of the ovary, the two stigmas were

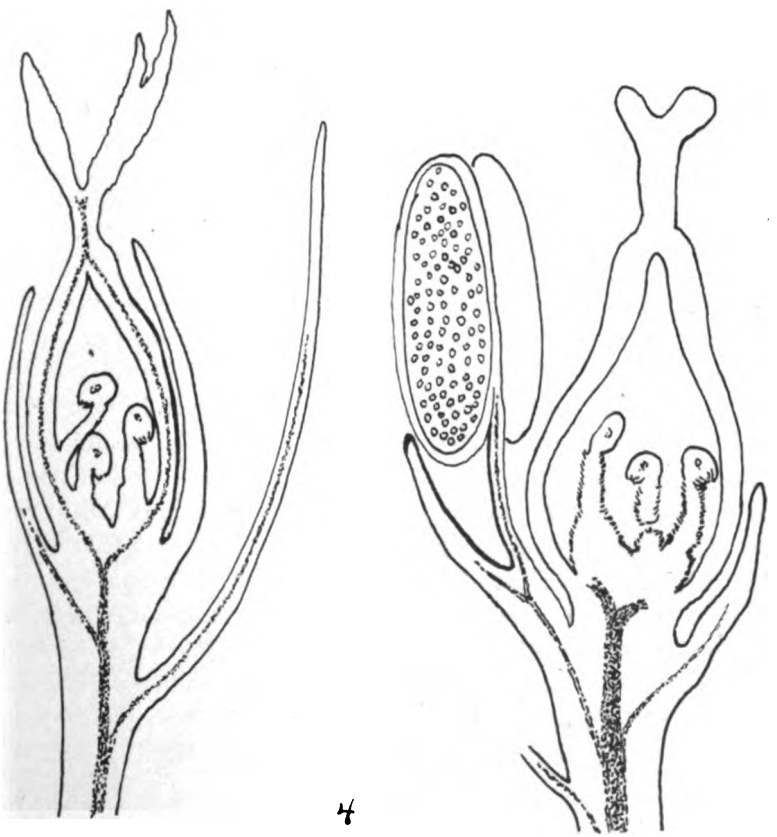

FIG. 4. Longitudinal sections of a normal pistillate and of a perfect flower of *Populus grandidentata*.

so deeply cleft as to give the appearance of four stigmas. On nearby staminate trees the flowers were normal—a shallow, oblique cup or disk with ten or twelve stamens, except near the tip of the catkins where the number of stamens was reduced to three or four. On the tree in question the abnormal catkins were

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on several branches on the south and west sides of the tree—the sides of best development—though even on these branches some twigs bore normal catkins. The abnormal catkins consisted chiefly of flowers with the deep cup-shaped receptacles of pistillate flowers with one pistil and one or two stamens, both pistil and stamens being functional. A few had perfect stamens but an aborted pistil, some a very small but apparently functional pistil. Near the tip of the catkins the flowers were very irregular with from four to six stamens, some with, some without a pistil. Scattered along the axis were ordinary pistillate flowers. Other catkins were predominately staminate. In these most of the flowers had the cup-shaped receptacles characteristic of pistillate flowers, but each with a number of stamens (4–6), and no pistil. Near the tip there was even greater irregularity than in the others. Around a terminal perfect flower were some staminate flowers with ten or more stamens and some stamens growing in the axils of smooth-edged scales. The figures show a few of the normal flowers, as well as several of the abnormal ones. The normal flowers were drawn from flowers of neighboring trees. Longitudinal sections of a normal pistillate flower and of one of the perfect ones are also shown. In the normal flower there was no trace of rudimentary stamens nor of bundle traces that might indicate their position. There is nothing to indicate that these perfect flowers show reversion to ancestral conditions, the explanation must be rather in some irregularity in the division of chromosomes. The tree had been struck by rolling stones and patches of bark knocked off, but the injury was no greater than on dozens of normal trees in the immediate vicinity.

YONKERS

NEWS ITEMS

At the annual meeting of the club held at the American Museum of Natural History on January 8, all the officers were re-elected for 1918. President Richards announces the same committees for 1918 as before with the addition of Mr. George T. Hastings to the Field Committee.

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The Torrey Botanical Club

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A monthly journal devoted to general botany, established 870. Vol. 44 published in 1917, contained 579 pages of text nd 26 full-page plates. Price $4.00 per annum. For Europe, 8 shillings. Dulau & Co., 47 Soho Square, London, are, gents for England.

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(2) MEMOIRS

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(3) **The Preliminary Catalogue of Anthophyta and Pteri- ophyta** reported as growing within one hundred miles of New 'ork, 1888. Price, $1.00.

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BY

NORMAN TAYLOR

JOHN TORREY, 1796–1873.

CONTENTS

Addition to the Flora of Western Oregon: T. C. Nelson..... 21

An undescribed Scirpus from California: N. L. Britton..... 36

Proceedings of the Club..... 36

News Items..... 39

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TORREYA

February, 1918.

Vol. 18 No. 2.

ADDITIONS TO THE FLORA OF WESTERN OREGON

By J. C. Nelson

The conditions of plant growth are so favorable in that part of Oregon lying west of the Cascade Mountains, and the establishment of introduced species is so easy, that it is becoming a serious task to keep pace with the increase. Not only are plants properly belonging to the Californian flora which prevails south of the Calapooias constantly extending their range to the northward, together with a steady immigration of inland species down the valley of the Columbia, but there is a constant influx of European immigrants which become self-sown and locally established very rapidly. It is therefore a matter of some regret to the local collectors who so warmly welcomed the latest manual covering this region (Piper and Beattie's Flora of the Northwest Coast) that its authors did not take more positive ground in regard to the inclusion of these immigrants. Their problem is one which confronts every botanist who undertakes to catalogue the flora of any considerable extent of territory. Two opposite points of view are possible. Either all introduced plants may be excluded, or all may be included. In the latter case, the list will be needlessly swelled by waifs and ballast-plants that will not persist, and are in no sense real members of the local flora; in the former, by leaving out all plants of foreign origin, some of the most abundant and characteristic species may be omitted and the value of the book to the local student seriously impaired. To the layman, the most easily intelligible purpose of any descriptive flora is to render it possible for any student to identify by its aid any plant which he may find growing spontaneously within its geo-

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graphical limits. That this aim is very rarely attained renders it none the less the chief *raison d'être* of every botanical manual. There is a practical problem involved here, as every author comes to realize. No publisher is likely to undertake the production of a work of this kind, unless he can be assured that it will sell. His chief customers will necessarily be the schools and colleges of the district covered. If it becomes evident that the book does not adequately serve the purpose above indicated, its chances of securing the indorsement of these institutions will not be very great. Our pupils in the secondary schools are not interested in taxonomic discussions; they want to be able to name the plants which they encounter in their excursions; and the commonest of these, at least here in Western Oregon, are just as likely to be introduced as indigenous. These foreign species can of course be relegated to an appendix, as has been done by Coulter and Rose in their Monograph of the North American Umbelliferae; but if they are included at all, it is much more convenient for the student to insert them in the body of the work.

The authors of the Flora of the Northwest Coast were of course at liberty to omit *all* introduced species; but since it is plain that they have included *some*, we are left to conjecture on what grounds others were excluded. For example, I have never seen but one specimen of *Ulex europaeus* growing wild about Salem; yet this species is included, while the related *Cytisus scoparius*, which sets our hills and roadsides ablaze in early spring, and is fast becoming a formidable menace to the farmer, finds no mention. Why should *Stellaria media* be included, and *Bellis perennis* be omitted, when the two are found everywhere growing together, and the latter is so abundant as to be in nine cases out of ten the first plant in flower encountered by the student? *Foeniculum vulgare* is a far more abundant and characteristic plant about Salem than *Hesperis matronalis;* yet the latter finds a place while the former does not appear. *Silybum marianum* and *Camelina microcarpa* I have never seen in Oregon except as ballast-plants, while *Melissa officinalis* and *Tanacetum vulgare* are everywhere common. The list could be indefinitely extended. When the most abundant and familiar of our local species find no place in a

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work of this kind, one is forced to conclude that its value is never going to be fully appreciated by beginners.

In the case of the indigenous species, it is to be regretted that the authors have selected as their southern boundary a barrier so easily crossed as the Calapooia Range. Experience shows that the species which have been regarded as distinctively Californian are pressing steadily northward, and in many cases have been reported far within the limits of this manual. No hard and fast geographical line of this sort can ever be drawn, and the attempt to do so only confuses and misleads the beginner. In the same way, species that have been considered as belonging to the flora of the interior are continually being transported down the Columbia, and even travelling over the lower summits of the Cascades. To say that these species are only recent introductions, and do not belong ecologically to this district, is only to beg the question. How can we show that they have not been here as long as the species which are more characteristic? The desert plants growing on the gravelly prairies about Salem are just as integral a part of the local flora as any typical west-coast forms.

The fact remains that the number of trained observers here in Oregon is all too few to keep pace with the exuberant invasion of foreign species. A few notes based on my own collections during the past three seasons may serve to show that we cannot accept the Flora of the Northwest Coast as final—which its distinguished authors would be the last to claim.

The following list is not intended to be exhaustive. I am sure that other collectors in this field, notably Mr. M. W. Gorman, of Portland, and Professor M. E. Peck, of Willamette University, will be able to add many names to this enumeration. It is simply a record of plants that I have myself collected, and that have in most cases been submitted to Professor Piper himself for identification. In the case of the grasses I am under obligation to Mrs. Agnes Chase, of the Bureau of Plant Industry at Washington, D. C., for her kindness in determining my specimens. Mr. Kenneth K. Mackenzie, of New York City, has been good enough to verify the sedges. Some of the rarer introduced plants

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have been very kindly verified by the staff of the Gray Herbarium. It will be understood that all species included in the following list have been collected within the Oregon limits of the Flora of the Northwest Coast, and that none of them are mentioned in its pages. The length of the list will serve to show how much field work remains to be done in this state before any manual of its flora can be regarded as complete.

1. *Typha angustifolia* L. Common along the mill-race at Eugene, and also observed in the old bed of Lake Labish, two miles east of Brooks, Marion Co.
2. *Syntherisma Ischaemum* (Schreb.) Nash. On sandy shores of the Willamette River at Salem, and also on lawns about the city.
3. *Panicum miliaceum* L. On rubbish-heaps about Salem.
4. *Anthoxanthum Puelii* Lecoq & Lamotte. In dry ditches by the roadside, Turner, Marion Co., and in similar situations near Fairfield in the same county.
5. *Aristida oligantha* Michx. Common along the sandy shores of the Willamette near Salem.
6. *Stipa occidentalis* Thurb. Dry rocky soil near Government Camp, Mt. Hood.
7. *Muhlenbergia filiformis* Rydb. In mud of dried-up ponds near Government Camp, Mt. Hood.
8. *Sporobolus cryptandrus* (Torr.) Gray. Muddy shore of the Columbia on Hayden Island, opposite Vancouver, Wash.
9. *Agrostis hiemalis* (Walt.) BSP., var. *geminata* Hitchc. Wet sandy streets, Newport.
10. *Avena fatua* L. Common along railroad tracks about Salem.
11. *Phragmites communis* Trin. In low ground, Lake Labish; also along the Columbia near Knappa and Blind Slough, Clatsop Co.
12. *Melica Geyeri* Munro. Roadsides about Salem.
13. *Briza minor* L. Abundant under trees in State Fair Ground, Salem.
14. *Poa scabrella* Benth. On gravelly prairies about Salem; also on rocks at Silver Creek Falls, Marion Co.

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15. *Festuca rubra* L., var. *megastachys* Gaud. Along railroad tracks and roadsides about Salem.
16. *Festuca idahoensis* Elmer. In dry pastures at Salem and Eugene.
17. *Scleropoa rigida* Griseb. Around buildings in business district, Salem.
18. *Bromus carinatus* Hook. & Arn. Very common in waste places everywhere. Much of what passes as *B. marginatus* Nees should be referred to this species.
19. *Bromus hordeaceus* L., var. *glabrescens* Shear. With the species, and almost equally common.
20. *Bromus tectorum* L. Along the railroad, Salem.
21. *Lolium perenne* L., var. *cristatum* Doell. Border of woods near Eola, Polk Co.
22. *Agropyron caesium* Presl. Dry soil about the lighthouse on Yaquina Head, Lincoln Co.
23. *Triticum vulgare* L. A common escape in railroad yards.
24. *Sitanion jubatum* Sm. Dry soil on Skinner's Butte, Eugene.
25. *Cyperus acuminatus* Torr. & Hook. Alkaline soil by the roadside, near Turner; also in wet ground at Salem.
26. *Cyperus esculentus* L. Common on the sandy shore of the Willamette at Salem.
27. *Eleocharis ovata* R. & S. In ditches along railroad, Walton, Lane Co.
28. *Carex Hallii* Bailey. On rocks in mountain streams at Gates, Marion Co. and Hendricks, Lane Co.; also in the Willamette at Salem.
29. *Carex leptopoda* Mackenzie ined. In low thickets along the McKenzie River at Dedman's Ferry, near Eugene.
30. *Carex subfusca* W. Boott. Dry pasture on mountain-side near Coburg, Lane Co.
31. *Carex interior* Bailey. In low ground in Lake Labish.
32. *Carex specifica* Bailey, var. *brevifructus* Kükenthal. Swampy ground along Silver Creek, near Silverton.
33. *Carex abrupta* Bailey. In a swamp near Government Camp, Mt. Hood.
34. *Carex tumulicola* Mackenzie. Not uncommon in dry ground about Salem.

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35. *Carex prairea* Dewey. Boggy meadow near Chemawa, Marion Co.
36. *Scirpus paludosus* A. Nels. In salt-marshes, Seaside, Clatsop Co.
37. *Juncus patens* Mey. Not uncommon in low ground about Salem.
38. *Juncus uncialis* Greene. In low meadows in Lake Labish, near Chemawa.
39. *Humulus Lupulus* L. Our commonest field crop, and a frequent escape to roadsides and thickets throughout the Willamette Valley.
40. *Cannabis sativa* L. On refuse-heaps about Salem.
41. *Chenopodium ambrosioides* L. On sand-bars along the Willamette at Salem.
42. *Chenopodium Botrys* L. Becoming abundant along the Willamette near Salem.
43. *Chenopodium glaucum* L. On sandy shore of the Columbia opposite Vancouver, Wash.
44. *Corispermum hyssopifolium* L. With the last.
45. *Sedum acre* L. Well established on waste ground, Salem.
46. *Agrostemma Githago* L. In grain-fields, Marion and Polk Cos., and on the border of a thicket at Salem.
47. *Silene dichotoma* Ehrh. On gravelly shore of North Santiam River, Detroit, Marion Co.
48. *Silene campanulata* Wats., var. *Greenei* Wats. Rocky summit of Spencer's Butte, near Eugene.
49. *Saponaria officinalis* L. Abundant in sandy soil along the Willamette from Eugene to Salem.
50. *Saponaria Vaccaria* L. In railroad yards, Portland.
51. *Sagina procumbens* L. Rocky border of garden at Elk Rock, Multnomah County.
52. *Cerastium nutans* Raf. In thickets, Falls City, Polk Co.
53. *Arenaria Douglasii* Fenzl. Rocky woods on Spencer's Butte, Eugene.
54. *Ranunculus arvensis* L. In wet meadow near Chemawa, Marion Co.
55. *Ranunculus bulbosus* L. In vacant yard, Salem.

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56. *Delphinium Ajacis* L. Abundant on waste ground at Salem.
57. *Papaver Rhoeas* L. In old gardens and waste ground, Salem.
58. *Fumaria officinalis* L. In cultivated ground, Salem.
59. *Corydalis lutea* DC. Rocky border of garden at Elk Rock, Multnomah Co.
60. *Iberis coronaria* Don. Dry soil on Skinner's Butte, Eugene.
61. *Lunaria annua* L. Alluvial soil along Mill Creek, Salem.
62. *Lepidium apetalum* Willd. Waste ground and street parking, Portland, Eugene, and Salem.*
63. *Lepidium perfoliatum* L. Becoming common in waste places about Portland and Salem.
64. *Lepidium campestre* (L.) R. Br. On street-parking, Eugene.
65. *Crambe maritima* L. Sandy beach at base of cliff on Yaquina Head.
66. *Brassica alba* (L.) Boiss. Alluvial bank of stream, Salem.
67. *Sisymbrium Sophia* L. In railroad-yards, Portland.
68. *Lobularia maritima* (L.) Desv. On sandy sea-beach, Newport.
69. *Saxifraga Sibthorpii* Boiss. On wet cliffs at Elk Rock.
70. *Therofon majus* (Gray) Wheelock. Rocky shore of North Santiam River at Gates, Marion Co., and along Silver Creek at Silverton.
71. *Pyrus communis* L. Thoroughly established along a stream near Champoeg, Marion Co.
72. *Horkelia congesta* Hook. Abundant on gravelly prairies about Salem.
73. *Horkelia hirsuta* Lindl. In open woods, Falls City.
74. *Cytisus scoparius* (L.) Link. Abundant on hillsides everywhere in Marion Co.
75. *Lupinus oreganus* Heller. Common in open ground about Salem.
76. *Melilotus indica* (L.) All. Waste ground on river-bank, Salem.
77. *Lotus Torreyi* Greene. Among rocks along the McKenzie River, Hendricks, Lane Co.
78. *Trifolium incarnatum* L. In open woods, Mill City, Marion Co.

* This may possibly be *L. medium* Greene, but the forms are not typical.

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79. *Robinia Pseudo-Acacia* L. Escaped from cultivation near Jefferson, Marion Co.
80. *Vicia villosa* Roth. Becoming abundant along fence-rows and railroad embankments about Salem.
81. *Vicia Faba* L. In State Fair Ground, Salem.
82. *Vicia dasycarpa* Tenore. Waste ground, Portland.
83. *Lathyrus latifolius* L. Very common on vacant lots about Salem.
84. *Lathyrus Aphaca* L. Not uncommon in waste ground at Salem.
85. *Linum usitatissimum* L. In railroad-yards and waste places, Salem.
86. *Euphorbia dictyosperma* Fisch. & Mey. Rocky roadside, East Independence, Marion Co.
87. *Euphorbia Lathyrus* L. In an old field, Tualatin; also around gardens at Salem.
88. *Vitis vinifera* L. Thoroughly established in thickets along the river at Salem.
89. *Malva sylvestris* L. In vacant lots and waste places, Salem.
90. *Sidalcea* sp. An apparently undescribed species is not uncommon in dry open places about Salem.*
91. *Boisduvalia glabella* Walp. In swales, Springfield; and in State Fair Ground, Salem.
92. *Onagra strigosa* Rydb. On a sand-bar in the Columbia River at Hayden Island, opposite Vancouver, Wash.
93. *Anogra pallida* (Lindl.) Britt. With the last.
94. *Conium maculatum* L. Very common along streets at Eugene; also on waste ground at Silverton and Portland.
95. *Foeniculum vulgare* Hill. Abundant on vacant lots at Salem.
96. *Lomatium macrocarpum* Coult. & Rose. On gravelly prairies about Salem.
97. *Anethum graveolens* L. In cultivated ground at Salem.
98. *Vinca major* L. Common on roadsides and river-banks about Salem.
99. *Asclepias speciosa* Torr. In dry pastures at Eugene, and in meadows at Gerlinger, Polk Co.

* Prof. Piper regards this as undescribed; but Mr. J. F. Macbride is inclined to refer it to *S. spicata* Greene, a Californian species that has been reported from southern Oregon.

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100. *Asclepias mexicana* Cav. On Skinner's Butte, Eugene; and in gravelly prairies and along the railroad near Salem.
101. *Gilia aggregata* Spreng. Rocky summit of Bald Mountain, near Detroit, Marion Co.
102. *Borago officinalis* L. Established on street-parking, Eugene.
103. *Cynoglossum officinale* L. Abundant on vacant lots at Mill City.
104. *Myosotis lutea* (Cav.) Pers., var. *versicolor* (Pers.) Thellung. Becoming common everywhere in fields and on roadsides in the Willamette Valley.
105. *Verbena officinalis* L. About old buildings at St. Paul, Marion Co.
106. *Thymus Serpyllum* L. Escaped from cultivation to roadsides at Jefferson and Salem.
107. *Lamium purpureum* L. Well established under trees on campus of Willamette University, Salem.
108. *Melissa officinalis* L. Common about towns throughout the Willamette Valley.
109. *Lycopus rubellus* Moench. In low ground along the Willamette, Salem.
110. *Mentha Pulegium* L. Common in pastures and on roadsides along the valley of the Mohawk River, above Hendricks.
111. *Mentha rotundifolia* (L.) Huds. On border of thicket near Springfield; and along roadside at Salem.
112. *Mentha Piperita* L. Common in wet places throughout the Willamette Valley.
113. *Physalis pruinosa* L. On gravelly shore of the Willamette at Salem.*
114. *Solanum Dulcamara* L. Very common in thickets in old bed of Lake Labish, appearing as if indigenous; also along Mill Creek at Salem, and in river-thickets at Independence.
115. *Solanum triflorum* Nutt. On sandy shore of the Columbia opposite Vancouver, Wash.
116. *Solanum nigrum* L., var. *villosum* L. On sandy shores of the Willamette at Salem; also on sandy roadsides along the Columbia near Portland.

* What seems to be *P. subglabrata* Mackenzie & Bush has also been collected along the railroad at Salem.

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117. *Datura Tatula* L. Growing with *D. Stramonium* L. in sandy river-bottoms near Salem.
118. *Nicotiana attenuata* Torr. In sandy soil about Portland.
119. *Verbascum speciosum* Schrad. Well established in grounds of Lewis & Clark Exposition, Portland.
120. *Linaria Cymbalaria* (L.) Mill. Around old buildings on river-bank, Salem.
121. *Antirrhinum majus* L. On railroad embankments near Salem.
122. *Limosella aquatica* L. On muddy shore of the Columbia opposite Vancouver, Wash.
123. *Veronica Tournefortii* Gmel. Common in cultivated ground, Salem and Oregon City.
124. *Plantago major* L., var. *asiatica* (L.) Dcne. On sandy sea-beach, Newport.
125. *Asperula odorata* L. A frequent escape about Salem and Portland.
126. *Galium verum* L. On street-parking, Salem.
127. *Galium sylvaticum* L. Escaped from cultivation about Salem.
128. *Galium parisiense* L. Dry road-side at base of Skinner's Butte, near Eugene; and on street-parking, Salem.
129. *Galium tricorne* Stokes. Climbing on bushes in a thicket near Eugene.
130. *Valerianella olitoria* Poll. On lawns and stone fences about Salem.
131. *Campanula Medium* L. A frequent escape about Salem.
132. *Campanula rapunculoides* L. On waste ground, Salem.
133. *Solidago caurina* Piper. Dry soil about Government Camp, Mt. Hood.*
134. *Bellis perennis* L. Abundant on lawns, and often in pastures about Salem.
135. *Erigeron corymbosus* Nutt. On gravelly prairies, Salem.
136. *Ambrosia artemisiifolia* L. Dry roadside near Salem.
137. *Xanthium spinosum* L. On waste ground, Salem.
138. *Helianthus annuus* L. A common escape on river-banks and in waste places, Salem and Eugene.

*A *Solidago* resembling *S. rugosa* Mill., evidently an escape, was found in a plowed field near Salem.

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139. *Bidens frondosa* L. Very common in low ground throughout the Willamette Valley.
140. *Coreopsis tinctoria* Nutt. In waste places, Salem.
141. *Lasthenia glaberrima* DC. Dry ditches along railroad near Salem; also near Jefferson, Marion Co.
142. *Chrysanthemum Parthenium* L. On river-banks at Salem; abundant along the railroad at Bridal Veil, Multnomah Co.
143. *Chrysanthemum Balsamita* L., var. *tanacetoides* Boiss. Well established along the railroad near Salem.
144. *Tanacetum vulgare* L. Common on road-sides and river-banks throughout the Willamette Valley.
145. *Artemisia Lindleyana* Bess. On sandy shore of the Columbia opposite Vancouver, Wash.
146. *Artemisia dracunculoides* Pursh. With the last.
147. *Artemisia Douglasiana* Bess. Common in river-bottoms along the Willamette.
148. *Artemisia biennis* Willd. In railroad yards, Portland.
149. *Senecio Cineraria* DC. Escaped to waste ground, Salem.
150. *Senecio Jacobaea* L. In railroad yards, Portland.
151. *Cirsium arvense* (L.) Scop., var. *mite* Wimm. & Grab. With the last.
152. *Cnicus benedictus* L. Borders of fields and on roadsides, south of Salem.
153. *Lactuca Scariola* L. Common in fields and waste places about Eugene and Salem, associated with the var. *integrata* Gren. & Godr.

The species that occur only as ballast-plants (about 75 in number) are not included in the above list, since an enumeration of these has appeared in a recent number of this journal.*

Of the 153 species listed above, 92, or 60 per cent. of the total, are undoubtedly introduced; the remaining 40 per cent. seem to be indigenous, though in the case of several this cannot be affirmed with certainty. The total number of species and named varieties mentioned in the Flora of the Northwest Coast is 1617. It does not seem unreasonable to assume that this number can be brought up to two thousand after a more thorough survey of the field.

The following extensions of range beyond the limits assigned

*September, 1917.

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by Piper and Beattie may also be of interest, as showing the rapidity with which many species are spreading. It will be understood that, as in the first list, all my specimens have been collected in Oregon. The range assigned by the authors is given first in each case.

1. *Ceropteris triangularis* (Kaulf.) Underw. "Crevices of rocks, mostly near the sea-coast . . . more common on the Oregon coast." On rocky hillsides near Turner, in the Willamette Valley.
2. *Equisetum littorale* Kühlewein. "Shawnigan Lake, Vancouver Island, *Macoun.*" "Agassiz, B. C., *Macoun.*" Abundant in marshy ground in Lake Labish.
3. *Phalaris minor* Retz. "On ballast, Nanaimo, Vancouver Island, *Macoun.*" On ballast at Linnton.
4. *Gastridium lendigerum* (L.) Gaud. "Umpqua Valley and southward, introduced. Perhaps not in our limits." Common about Eugene.
5. *Festuca aristulata* (Torr.) Shear. "Upper Willamette Valley to California." About Eola, Polk Co., in the central valley.
6. *Festuca rubra* L. "Mostly along the sea-shore." Not uncommon on gravelly prairies about Salem, appearing as if indigenous, and common on lawns, where it is plainly introduced.
7. *Poa multnomae* Piper. "On rock cliffs along the Columbia." On rocks in the gorge of Silver Creek, above Silverton, Marion Co.
8. *Hordeum jubatum* L. "In salt marshes." Common on gravelly prairies about Salem.
9. *Carex verecunda* Holm. "Known only from Mount Hood, Oregon." On grassy shaded roadsides in the hilly country fifteen miles east of Salem.
10. *Carex athrostachya* Olney. "Rare in our limits but common east of the Cascade Mountains. Reported from Victoria, British Columbia, *Macoun.*" Common along the muddy shore of the Willamette at Salem.
11. *Carex Hindsii* Clarke. "Along the ocean coast, Vancouver

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Island to Oregon." In overflowed meadows on Hayden Island, opposite Vancouver, Washington.

12. *Scirpus validus* Vahl. "Rare in our limits, reported from Vancouver Island, *Macoun.*" In swampy ground near St. Paul, Marion Co.
13. *Juncus Bolanderi* Engelm. "Vancouver Island to northern California, near the coast." About Springfield in the Willamette Valley.
14. *Disporum Smithii* (Hook.) Piper. "Along the coast, Nootka Sound . . . to northern California." In woods at Silver Creek Falls, in the western foothills of the Cascades.
15. *Sisyrinchium birameum* Piper. "Vancouver, Washington, *Piper.*" In low ground near Chemawa, Marion County.
16. *Eriogonum nudum* Dougl. "Upper Willamette Valley and southward." On gravelly prairies about Salem.
17. *Polygonum bistortoides* Pursh. "Moist meadows in the mountains at 1,500 to 2,000 m. altitude." In low ground about Salem at less than 70 m.
18. *Amaranthus graecizans* L. "Departure Bay, Vancouver Island, *Macoun.*" In waste ground about Eugene.
19. *Amaranthus blitoides* Wats. "Departure Bay, Vancouver Island, British Columbia, *Macoun.*" On the shore of the Columbia at Hayden Island.
20. *Mollugo verticillata* L. "On river-banks, probably in our limits." Common on the sandy shore of the Willamette at Salem.
21. *Spergula sativa* Boenn. "Victoria, Macoun." In cultivated ground and waste places at Salem.
22. *Clematis ligusticifolia* Nutt. "Reported from the Willamette Valley, but not verified." Abundant in thickets along the Willamette from Eugene northward.
23. *Caltha asarifolia* DC. "In bogs, along the coast, Alaska to Oregon." In the old bed of Lake Labish, in the Willamette Valley near Salem.
24. *Cakile edentula* (Bigel.) Hook. "Very rare along the seacoast." One of the commonest beach plants about Seaside and Newport.

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25. *Radicula obtusa* (Nutt.) Greene. "Reported from Vancouver Island, British Columbia, *Macoun.*" Abundant on mud-flats, Oswego Lake, Clackamas Co.; and on the shore of the Columbia at Hayden Island.
26. *Lepidium Draba* L. "Sparingly introduced from Europe; Victoria, B. C., *Anderson.*" On ballast at Linnton.
27. *Mitella ovalis* Greene. "In moist ground near the coast, Vancouver Island to California." In woods at Silver Creek Falls, with No. 14.
28. *Sanguisorba microcephala* Presl. "In bogs near the ocean coast, Alaska to northern California." In a swamp near Government Camp, Mt. Hood, at 4,000 feet elevation.
29. *Geum strictum* Ait. "Victoria, British Columbia, *Macoun.* Not elsewhere reported from west of Cascade Mountains." Along wooded roadsides at Elk Rock, near Portland.
30. *Trifolium microdon* Hook. & Arn. "Sandy soil, near the seacoast." Open ground at Falls City, on the eastern slope of the Coast Range.
31. *Osmorhiza ambigua* (Gray) Coult. & Rose. "In the mountains at about 1,500 m. altitude, rare." Not uncommon about Salem at less than 70 m.*
32. *Ledum columbianum* Piper. "In sphagnum bogs, near the mouth of the Columbia River." On sand-dunes at Newport; and in a bog in the old bed of Lake Labish.
33. *Lysimachia Nummularia* L. "Portland, Oregon, *Gorman.*" In low thickets along the Willamette at Salem.
34. *Nemophila atomaria* Fisch. & Mey. "Douglas Co., Oregon and southward." Very common in Marion Co. between Marion and Jefferson.
35. *Mertensia denticulata* (Lehm.) Piper. "In woods near the ocean coast in Washington." In low woods along the Willamette at Salem. Macbride's recent revision of this genus clearly shows that this species should be called *M. platyphylla* Heller.
36. *Scutellaria galericulata* L. "Rare in our limits; Mt. Constitution, *Henderson.*" In low ground in Lake Labish.

*So determined by Piper; but Macbride regards it as *O. occidentalis* (Nutt.) Torr., which is not included in the Flora of the Northwest Coast.

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37. *Scutellaria angustifolia* Pursh. "Rare in our limits; Victoria, *Macoun.*" On summit of Spencer's Butte, near Eugene.
38. *Stachys palustris* L. "In wet places, rare in our limits: Vancouver, Washington, *Suksdorf.*" In low ground about Eugene and Salem.
39. *Stachys pubens* (Gray) Heller. "In swampy places near the ocean coast." Not uncommon about Eugene.
40. *Castilleja levisecta* Greenm. "In open meadows near the seacoast, Vancouver Island and Washington." In a wet meadow south of Salem.
41. *Heterocodon rariflorum* Nutt. "Said to occur in the Willamette Valley." Found in Lake Labish, and also along the railroad south of Salem.
42. *Campanula prenanthoides* Durand. "In open places, southern Oregon, perhaps not reaching our limits." In rocky woods on Spencer's Butte, near Eugene.
43. *Xanthium varians* Greene. "Sandy banks of the Columbia River." Common along the shores of the Willamette as far south as Independence.
44. *Chrysopsis villosa* (Pursh) Nutt. "Rare west of the Cascade Mountains; Coupeville, Washington, *Gardner.*" On gravelly shores of the Willamette from Independence to Salem.
45. *Senecio sylvaticus* L. "Introduced from Europe; Portland, Oregon, *Gorman.*" Common in the Coast Range west of Eugene, and abundant along the coast from Newport to the mouth of the Columbia.

In the case of many other species the notation "rare" or "infrequent" is inaccurate as far as the region about Salem is concerned.

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AN UNDESCRIBED SCIRPUS FROM CALIFORNIA

By N. L. Britton

Scirpus Congdoni sp. nov.

Perennial by short stout rootstocks. Culms slender, erect, smooth, somewhat trigonous, 4–5 dm. high, leaf-bearing below the middle. Leaves linear, smooth, acuminate, 5–6 mm. wide, the lower ones 1.5–2 dm. long, the upper shorter; involucral leaf similar to the others, 3–7 cm. long; umbel more or less compound, its principal rays 3–6, very slender, 8 cm. long or less; spikelets sessile, capitate at the ends of the rays and raylets, several-flowered, the heads 7–10 mm. in diameter; scales brown, ovate to ovate-lanceolate, rather abruptly acuminate; style 3-cleft; achene pale, trigonous, about 1 mm. long, its short subulate beak about 0.2 mm. long; bristles filiforme, curled, only slightly roughened, rather longer than the achene.

Sierra Nevada, California. Type, preserved in the Dudley Herbarium of Stanford University, collected by J. W. Congdon on the Upper San Joaquin, Madera County, August 18, 1895.

Professor Fernald obligingly informs me that the plant recorded in Dr. Watson's Botany of California as *S. atrovirens*, collected by Mrs. Austin in Plumas County, is referable to the species here described; the Hall and Chandler specimen No. 217 from Pine Ridge, Fresno County, is the same.

Record may here be made that the Oregon plant collected by Howell and referred to *S. atrovirens* in Botany of California is *S. pallidus* (Britton) Fernald, as now determined by Professor Fernald; the Washington sedges recorded by Professor Piper as *S. atrovirens* are also *S. pallidus*.

These studies indicate that all records of *S. atrovirens* from the Pacific States are erroneous.

PROCEEDINGS OF THE CLUB

October 9, 1917

The meeting was held in the lecture room of the Department of Botany, Columbia University. President Richards called the meeting to order at 8:15 P.M. There were 14 members present. The minutes of May 23 were read and approved.

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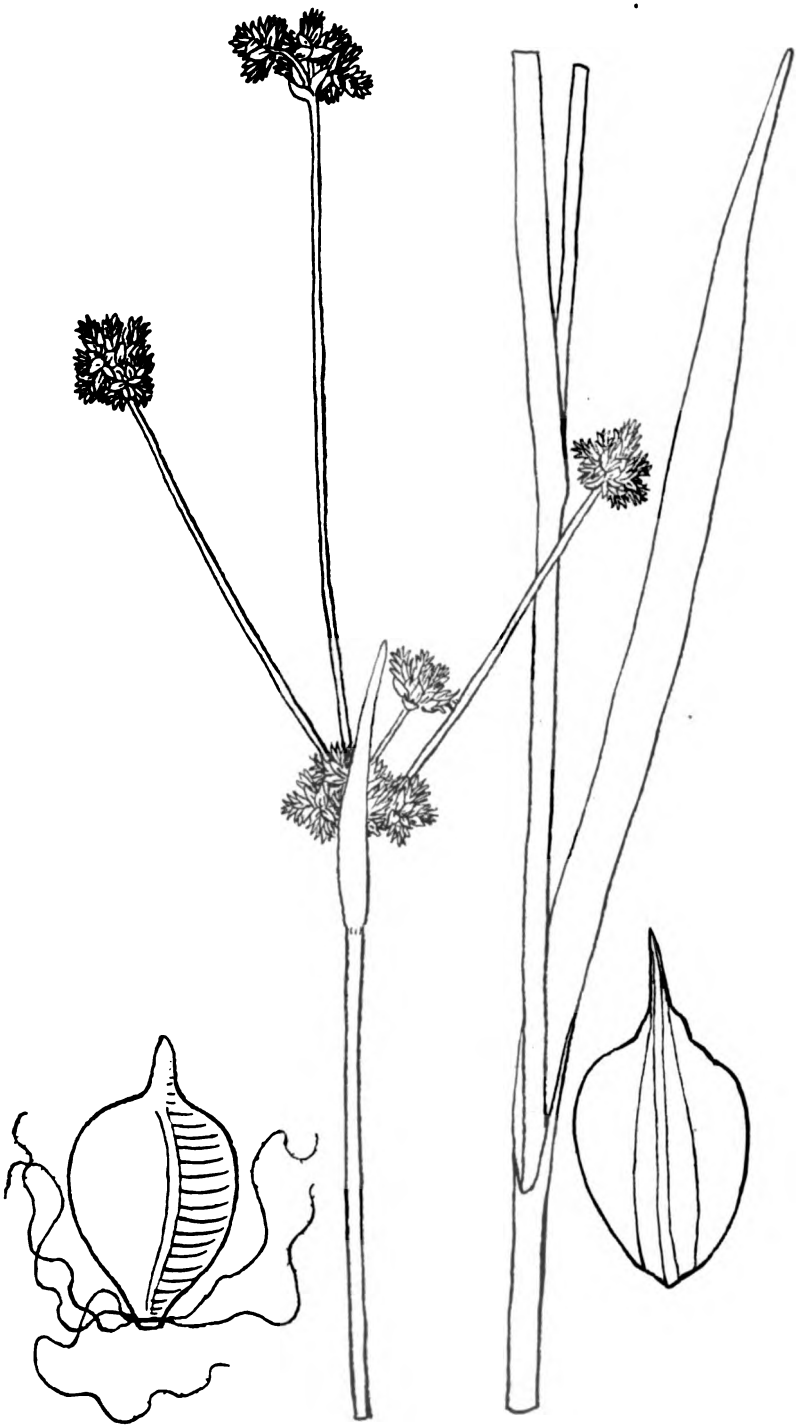

FIG. 1. *Scirpus Congdoni* Britton.

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Dr. Stout proposed Professor W. T. Horne, Berkeley, California, and Mr. Wilson proposed Mr. R. Diamant, 2040 7th Avenue, N. Y. for membership.

Dr. M. A. Howe made a brief report on behalf of the committee appointed to make arrangements for the celebration of the fiftieth anniversary of the Club, after which it was voted to omit the usual Wednesday meeting of the Club this month.

The election of Professor Horne and Mr. Diamant followed upon the recommendation of Dr. M. Levine for the Committee on Admissions.

The scientific program consisted of informal reports by several members of the Club on their individual botanical experiences of the summer. The following members responded to the call of the President: Professor R. A. Harper, Dr. M. A. Howe, Dr. Beeman Douglass, Professor T. E. Hazen, Dr. M. Levine, Dr. R. M. Harper, Professor J. F. Adams and Professor H. M. Richards. Informal discussions followed each report.

Meeting adjourned at 10:00 P.M.

B. O. DODGE,
Secretary.

NOVEMBER 13, 1917

The meeting was held in the lecture room of the Department of Botany, Columbia University, at 8:15 P.M. President Richards presided. There were 40 persons present.

The minutes of the meeting held October 9 were approved. The following persons were nominated for membership: Professor C. R. Orton, State College, Pa., Professor W. C. Twiss, University of Utah, Salt Lake City, Professor Otis Caldwell, Lincoln School, New York City, Professor John Ritchie, 2 A Beech Terrace, Yonkers, N. Y., Mr. Robert Steinberg, Columbia University, N. Y. City, Miss Cornelia Carey, Ludington Road, West Orange, N. J., and Miss Rhoda Benham, Cedarhurst, N. Y.

The committee consisting of the Board of Editors and Dr. Britton, Professor Harper, Dr. Gager and Dr. Barnhart, appointed to consider the question of an abstract journal for botanical papers presented the following report which was read by Dr. Barnhart:

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"The Committee on a Proposed American Botanical Abstract Journal voted, among other things, that—

"'This Committee considers an American Botanical Abstract Journal practicable, provided that it can be properly financed'; that

"'This Committee, while recognizing the value and need of an abstract journal, doubts whether this is a propitious time to appeal for endowment for this purpose'; and recommended

"'That Professor R. A. Harper, Dr. C. S. Gager, and Dr. J. H. Barnhart be appointed as representatives of the Torrey Botanical Club at any conference to be held at Pittsburgh during the coming Convocation Week leading to the establishment of an American Botanical Abstract Journal. Each of these representatives being authorized to select a substitute in case he is not present at Pittsburgh."

The report was approved and the recommendations were adopted by a vote of the Club. The Committee was continued.

The Committee on Admissions having approved the nominations made at the opening of the meeting the following persons were elected to membership: Professor C. R. Orton, Professor W. C. Twiss, Professor Otis Caldwell, Professor John Ritchie, Mr. Robert Steinberg, Miss Cornelia Carey, and Miss Rhoda Benham.

The scientific program consisted of an illustrated lecture on "An Account of a Visit to the Juan Fernandez Islands," by Dr. Carl Skottsberg.

Adjournment followed.

B. O. DODGE,
Secretary.

NEWS ITEMS

Owing to the coal shortage Conservatory Range No. 2 at the New York Botanical Garden was cleared in December, the plants all being housed in the old conservatory range. On January 10 the Brooklyn Botanic Garden reduced by 375 linear feet its greenhouse space, thus crowding the collections in fewer houses, and necessitating the closing of the conservatories to the public.

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On January 12 the second issue of the *Journal* of the International Garden Club was issued. Hereafter the publication will be issued quarterly in March, June, September and December.

The British government has ordered one hundred thousand kapok waistcoats for its sailors. This "vegetable wool," derived from *Bombax malabaricum*, has been suggested as desirable also for our own sailors.

The War Emergency Board of the American Phytopathological Society, which was organized at the Pittsburgh meeting during the holidays, held a meeting in Washington, February 9–11. The organization of this board is the result of a determination on the part of plant pathologists to do their part in winning the war. Certain problems of nation wide importance are being handled. At the special meeting reports on these projects were made. A census of all persons able to do pathological work is being taken and encouraging progress was noted. Other projects on Fungicides and Machinery, Emergency Research, Plant Disease Survey, and Crop Loss Estimates were considered at some length. Plant pathologists have in the war conditions a great opportunity for service to the commonwealth, for there is no more vital feature in maintaining maximum crop production than that of the reduction of leakage due to crop diseases. The board is working with all existing agencies of state and nation. The members of the board are H. H. Whetzel, Cornell University; F. D. Kern, The Pennsylvania State College; E. C. Stakman, University of Minnesota; H. P. Barss, Oregon Agricultural College; H. W. Barre, Clemson College; G. H. Coons, Michigan Agricultural College: and G. W. Lyman, U. S. Department of Agriculture.

Charles E. Faxon, the assistant director of the Arnold Arboretum died early in February at the age of 73. He was known throughout the country as a botanical illustrator, having made hundreds of notable drawings for Sargent's *Sylva* and many other books.

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The Torey Botanical Club

Contributors of accepted articles and reviews who wish six gratuitous copies of the number of TORREYA in which their papers appear, will kindly notify the editor when returning proof.

Reprints should be ordered, when galley proof is returned to the editor. The New Era Printing Co., 41 North Queen Street, Lancaster, Pa., have furnished the following rates:

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The following committees have been appointed for 1918:

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Chytridiaceae,
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Yeast and Bacteria: Prof. J. Broadhurst
Insect galls: Mel T. Cook

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OTHER PUBLICATIONS

OF THE

TORREY BOTANICAL CLUB

(1) BULLETIN

A monthly journal devoted to general botany, established 1870. Vol. 44 published in 1917, contained 579 pages of text and 26 full-page plates. Price $4.00 per annum. For Europe, 18 shillings. Dulau & Co., 47 Soho Square, London, are, agents for England.

Of former volumes, only 24–44 can be supplied entire; certain numbers of other volumes are available, but the entire stock of some numbers has been reserved for the completion of sets Vols. 24–27 are furnished at the published price of two dollars each; Vols. 28–44 three dollars each.

Single copies (30 cents) will be furnished only when not breaking complete volumes.

(2) MEMOIRS

The MEMOIRS, established 1889, are published at irregular intervals. Volumes 1–15 are now completed; No. 1 of Vol. 16 has been issued. The subscription price is fixed at $3.00 per volume in advance. The numbers can also be purchased singly. A list of titles of the individual papers and of prices will be furnished on application.

(3) The Preliminary Catalogue of Anthophyta and Pteridophyta reported as growing within one hundred miles of New York, 1888. Price, $1.00.

Correspondence relating to the above publications should be addressed to

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Columbia University
New York City

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A Monthly Journal of Botanical Notes and News

EDITED FOR

THE TORREY BOTANICAL CLUB

BY

NORMAN TAYLOR

JOHN TORREY, 1796–1873.

CONTENTS

A sketch of plant classification from Theophrastus to the present: Alfred Gundersen 231
Labrador Tea in New Jersey: K. K. Mackenzie 239
Shorter notes:
Double Flowers in Hemerocallis pulva: N. M. Grier 242
Reviews:
Natural History of the District of Columbia: N. T. 242
Proceedings of the Club 243
Date of Publications. 246
Errata 246
Index to volume eighteen 247

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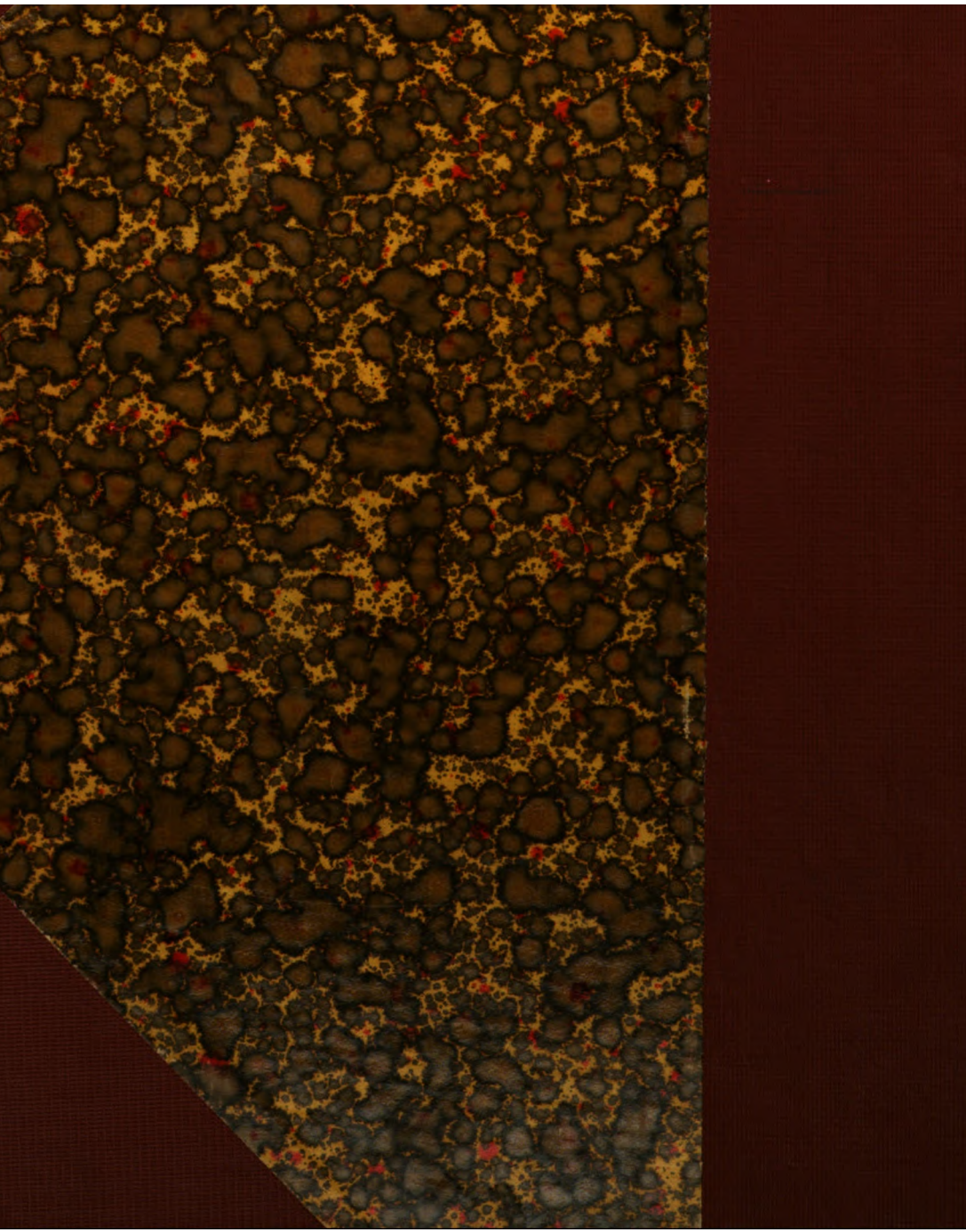

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